DISTRIBUTION OF U.S. MILITARY CERTIFIED REGISTERED NURSE ANESTHETISTS IN MEDICAL TREATMENT FACILITIES

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ABSTRACT

The purpose of this study was to describe the location and distribution of Certified Registered Nurse Anesthetists (CRNAs) within the military, medical treatment facilities (MTFs), CRNA billets, and MTF characteristics. The three databases used for this analysis were the 1994 population distribution by county from the U.S. Bureau of the Census, the U.S. Medicine 1997-1998 Directory of Federal Medical Treatment facilities, and the CRNA assignment lists provided by the military service CRNA assignment officers. The number of authorized military CRNA positions (or billets) in September 1997 was 578. As of September 1997, 549 of the billets (95%) authorized were filled by CRNAs, including 213 in the Army (89% staffing), 114 in the Navy (97% staffing), and 222 in the Air Force (100% staffing). This study describes where military CRNA's are assigned, and found no correlation between civilian population density and military CRNA density. Analysis of CRNA staffing and their location throughout the military found that the Air Force had the greatest number of small facilities and the lowest surgical bed to CRNA ratio compared to the Army and Navy. In contrast, nearly all of the Army facilities are large or medium and have lower surgical bed to CRNA ratio. This analysis model may be useful in assessing the anesthesia needs for the U. S. military worldwide.

Keywords: Anesthesia, Practice, Certified Registered Nurse Anesthetist, Global, Military, Distribution

DISTRIBUTION OF U.S. MILITARY CERTIFIED REGISTERED NURSE ANESTHETISTS IN MEDICAL TREATMENT FACILITIES

by

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PREFACE

This research was conducted to identify the worldwide distribution of CRNAs in the military, and to analyze factors determining that distribution.

DEDICATION

This work is dedicated to my wife, Becky. My success is a tribute to her support, and the fruits of this effort are as much hers as they are mine. Thank you, Becky. I love you.

ACKNOWLEDGMENT

I would like to acknowledge the tremendous time and effort I received from my chairperson, Dr. W. Patrick Monaghan, without whom this project would not have been. I also appreciate the direction and guidance provided by my thesis committee members, Dr. E. Jane McCarthy and Dr. Eugene Levine.

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CHAPTER ONE: INTRODUCTION

Statement of the Problem

Within the military, assignment opportunities for CRNAs are variable. The current downsizing of U. S. forces has significantly affected aspects of staffing in the military. The most substantial decrease in numbers in the military have already taken place (Perry, 1995). This has resulted in a work environment less understood than it once was; one where job opportunities that were once available no longer exist, and jobs that recently did not exist may now be required. A better understanding of the professional manpower availability and different manpower requirements among the Army, Navy and Air Force by military planners may help provide better cross service utilization.

A recently published study by Fallacaro, Obst, Gunn and Chu (1996) analyzed the metropolitan and non-metropolitan distribution of CRNAs, including their age, gender and educational level distribution in these two settings. The authors used two databases for this study. The first database provided the age, education level and residence Zip Codes of 22,268 practicing CRNAs who are members of the American Association of Nurse Anesthetists (AANA). The sample consisted of the 97% of practicing CRNAs in the United States who are members of the AANA (Bankert, 1993). The database was obtained from the AANA Membership and Information Systems Department. Geographical zip codes were cross-referenced to locate each specific CRNA place of residence by county throughout the United States. A second database, obtained from the United States Department of Agriculture, is entitled the Rural-Urban Continuum Codes for Metro and Nonmetro Counties (Butler & Seale, 1993). This database presents classification codes describing the 3,140 counties within the U. S. by degree of urbanization and nearness to metropolitan areas. Ten county types, based on their populations, are

codified. These vary from metropolitan counties (those with populations greater than 1,000,000) to rural counties (populations less than 2,500) (Butler & Beale, 1993). Four of the 10 categories (0 through 3) are identified as metropolitan, with the remaining six (4 through 9) labeled nonmetropolitan.

Fallacaro et al. (1996) found that 81.3% of CRNAs sampled reside in metropolitan counties and the remaining 18.7% of CRNAs resided in nonmetropolitan counties. Gender, age and educational levels of practicing CRNAs were unequally distributed across the rural/urban continuum. For example, his study found that CRNAs practicing in rural settings tended to be male, and those practicing in urban settings tended to be female. Additionally, CRNAs in urban settings were more likely to be younger and possess a masters degree, while those in rural practice tended to be older and reported their highest educational level at the diploma and associates degree level (pp. 239-240).

As a result of the Fallacaro et al. (1996) study, a greater understanding of civilian CRNA distribution across the United States now exists. No known study, however, has been accomplished concerning the worldwide distribution characteristics of military CRNAs. A greater understanding of CRNA distribution patterns of the three military services could prove valuable by facilitating increased cooperation and cross-utilization during time of need. For the military CRNA contemplating reassignment, knowing the presence of CRNAs from other services or the facility characteristics of a potential station might impact any requests. Of equal benefit to civilian CRNAs considering a career in the military, a single list of potential assignments and the facility characteristics of each hospital in all three services may be of value.

Significance of the Problem

Assignments for CRNAs in the military are variable. They are highly dependent on such factors such as location availability and

specific skills certification, such as those that may be required in remote locations. In the military there is always the possibility of deployment, and absence or rotation of facility personnel such as CRNAs can occur as a result of those deployments. Replacement personnel may be required immediately by the facility providing the deployment manpower before resumption of normal operation. For example, in the initial staffing of field hospitals in the former Yugoslav Republic, a deployment was made by the U. S. Army hospital in W rzburg, Germany. This facility needed replacements that were provided by Army personnel from the U. S. hospital in Landstuhl, Germany. Landstuhl Regional Medical Center is a shared facility manned by personnel from the Army and Air Force, and therefore when the Army deployment took place, the Air Force CRNAs remained and maintained operative capability at the facility. Landstuhl was quickly back-filled by personnel from a number of CONUS military facilities and Reserve Units, and the burden was eventually spread among many facilities. The shared facility concept allowed the Landstuhl Hospital to remain operative while the back-filling of personnel was accomplished. An understanding of the worldwide distribution of military CRNAs would be helpful to medical planners and assignment officers in accomplishing the backfilling of critical specialists such as CRNAs.

Staffing military facilities within the United States (CONUS) and around the world provides many unique opportunities for the military CRNA. The distribution of CRNAs throughout the military is based primarily on the need of the facilities. Some CRNA needs of the various facilities above a minimum is usually based on historical data of actual caseload and case mix. In the case of overseas MTFs and especially in deployment situations, an anticipated surgical caseload and case mix is more frequently of primary concern.

Considerations in the assignment process are the preference of the personnel being assigned and the need to gain clinical experience. As of June, 1993, there was authorization for manning of 682 CRNAs within the military services, but the staffing showed a manning of only 534

CRNAs with an attrition rate of 100 CRNAs per year (Levine, 1994). As CRNAs leave the military, clinical anesthesia experience is lost along with those experiences in the military such as deployments and field training exercises. These qualifications cannot be solely based on CRNA credentials. Replacements may frequently be new graduates or those who possess only civilian experience.

Making assignments often involves consideration of the professional experience level of the CRNA and the number and types of cases performed in the MTF being proposed for assignment. A newly graduated CRNA assigned to a remote facility without adequate support personnel could have an impact on the quality of patient care. Likewise, it may not be the best use of a critical manpower resource to place a highly skilled CRNA in a MTF within proximity of urban resources when a greater need exists in a more remote military location.

Location of assignment has also been identified as an important component of job satisfaction within the military. By understanding the distribution of CRNAs in the military, staffing may be better managed by the services. With a greater understanding of the CRNA assignments, a better informed CRNA may be able to make a more realistic assignment request. The shortage of CRNAs in the military personnel assignment demands continued analysis.

Background of the Problem

As the Fallacaro et al. (1996) report indicates, it is important to know the location and availability of professional CRNAs throughout the U. S. The distribution and utilization of military CRNAs has received little attention. The purpose of this study is to locate CRNAs in the military, identify characteristics of the facilities in which they work, and identify current manning levels for each service. These data should help the services identify and manage CRNA shortages in critical geographical locations.

Major Research Goal

The goal of this study is to identify the location of CRNAs in the U. S. military throughout the world in relation to the facilities to which they are assigned. No data presently exist that accurately describes the distribution of U. S. military CRNAs worldwide. Each service has a list of CRNAs billets within their system, but there is no analysis of military CRNAs as a whole. The number of CRNAs in relation to caseload for each type of military MTF is also currently unknown.

Objective of the Study

The main objective of this thesis was to replicate the Fallacaro et al. (1996) study, with a focus on military CRNAs. Databases with information similar to that used by Fallacaro et al. (1996) but specific to military CRNAs and Medical Treatment Facilities (MTF) as well as comparable civilian population distribution data were analyzed. Military CRNAs stationed overseas were also included. By law, assignment of military personnel is carried out without regard to age or gender. Therefore, age or gender should not affect distribution of military personnel (Air Force Instruction 36-2110 (1994), Operational Naval Instruction 5354.1D (1996), Army Regulation 40-6 (1987)).

Educational levels of CRNAs, too, are prescribed by policy and therefore differ from civilian CRNAs. A bachelor s degree is required for registered nurses within the military (Air Force Instruction 36-2005 (1994), Secretary of the Navy Instruction 1120.6B (1989), Army Regulation 600-20 (1993)). Military nurses entering a military CRNA program must possess a bachelor s degree. By 1998, all graduates of CRNA programs will be awarded a master s degree (Levine, 1994).

In this study the number and location of CRNAs in each medical facility will also be determined. Facility information acquired from the 1997-98 Directory of Federal Medical Treatment Facilities published by U. S. Medicine (1997) will be used. Military inpatient medical facilities, patient census characteristics, and facility Zip Codes are identified from this directory. In this study, medical facilities were classified by number of inpatient beds to accurately reflect the complexity of anesthesia services needed. This resulted in three categories to classify each facility: Large, Medium, and Small (Table 1).

Table 1.

Classification of Inpatient Military Medical Treatment Facilities (MTF) by number of Inpatient Beds

Classification of MTF	Number of Inpatient Beds
Large	80 and over
Medium	21 - 80
Small	Less than 21

The surgical procedures performed in civilian sector ambulatory surgical centers have increased more than six-fold since 1984 (Garde, 1996). Similar trends have occurred in the military. Military CRNAs not only provide anesthesia in outpatient surgeries and pain clinics, but also are frequently part of various hospital code teams. Inclusion

in obstetric pain management also increases the demand on the CRNA manpower resource.

Another parameter considered in this study is the total CRNA manpower and the number of personnel authorized at each facility. CRNA manpower requirements, or billets, for each branch of the military are the total number of CRNAs authorized to be positioned at any MTF operated by each of the services. The numbers of billets are primarily based on the facility s surgical caseload and case mix. Usually a minimum of one CRNA must be assigned at each facility, regardless of caseload. These data were obtained from the nurse anesthesia consultants to the Surgeon General in each of the services. An analysis was made of present manpower will be compared to required manpower in each MTF.

Definitions

Billet

A term used in the military that refers to a specific position authorized and budgeted to be filled by a full time trained personnel at a specific location based on need. For a CRNA to be assigned to a facility, a CRNA billet must exist. For example, a small military treatment facility might have the need for two CRNAs. Assuming the positions are authorized, this facility would have billets for two CRNAs. Billets are not always filled or they may be overfilled. The number of billets at any facility is variable and subject to change based on parameters that reflect facility need.

Branch of Service (or Service)

A phrase (or term) that represents the three divisions of the military that make up the Department of Defense (DoD): U. S. Army, U. S. Navy, and U. S. Air Force. The Marine Corps is a component of the Department of the Navy but is a separate uniformed service. Moreover, there are three other uniformed services that exist outside the DoD: the U. S. Coast Guard, U. S. Public Health Service, and the National Oceanographic and Atmospheric Administration.

Caseload

In this study, Caseload term refers to the number of surgical cases accomplished in a given period of time. Typically, the smallest period of time considered is a day, but to accurately project facility needs, trends in numbers of surgical cases need to be determined. This would require studies that are carried out over a long period of time. One might see increased caseloads on weekends during the summer or a decreased caseload during holidays that would warrant scheduling to adapt manpower availability at those times. For this study, personnel assignments reflect long-term projections and are based on annual caseloads.

Case Mix

Refers to the variety and complexity of cases at a facility. Larger medical facilities are equipped and manned to do more complicated procedures while smaller MTFs typically do less complicated procedures. Nearness to metropolitan areas with civilian medical facilities may affect capabilities maintained at the large or small military treatment facilities. Types of cases that are done (or anticipated) determine the number and experience level of personnel assigned to MTFs. Important considerations that can affect this factor are remote locations with small medical treatment facilities where civilian health is not available, or, as in the case of many overseas locations, the civilian hospital provides a level of care considered substandard to American

facilities. In these settings, it is important that the personnel assigned have the experience to manage clinical situations that under ideal conditions would be either be diverted or stabilized and evacuated to larger treatment facilities.

CONUS

An abbreviated term for the Continental United States. It is a military term used to distinguish military resources within the 48 continental United States from those overseas. Administratively, Alaska and Hawaii are considered overseas. Bases, facilities, or billets are referred to as either overseas or CONUS. Among personnel based overseas, travel back to the U. S. is frequently termed CONUS .

CRNA

The abbreviation for Certified Registered Nurse Anesthetist. A CRNA denotes a registered nurse who has received advanced training in anesthesia care and is legally qualified to administer anesthesia. In order to qualify, a registered nurse must graduate from an accredited program and pass a national certification board examination. Recertification is necessary every two years and requires 40 continuing education credits (Foster & Jordan, 1994).

Drawdown

In the context of recent military policy, drawdown refers to the lowering of manpower requirements in response to a lessening need for military manpower. The goal of meeting the manpower needs of the military is stated in the Future Years Defense Program, which calls for a reduction in active military personnel and force levels by over 30 percent since the beginning of 1990 (Perry, 1995).

Member

Any Soldier, Sailor, Airman or Marine serving in the U. S. Armed Forces.

Military Medical Treatment Facility (MTF)

A U. S. Armed Forces hospital. As of September 1997, there were 110 inpatient facilities and numerous outpatient care facilities (clinics) maintained by the U. S. Department of Defense for use by active duty and retired members and their dependents. These hospitals range from facilities with potential capacities of more than 700 to those with less than 5 inpatient beds. Military MTFs are typically structured with an ability to expand their bed capacity to meet most contingencies.

Zip Codes

Defined by the American Heritage Dictionary as a trademark for a system designed to expedite the sorting and delivery of mail by assigning a series of numbers to each delivery area in the U. S. The U. S. Government provides this service to U. S. military posts and extends this system to certain overseas sites for use at bases, embassies, and other U. S. Government managed facilities.

Limitations

The study focuses only on active duty military CRNAs placed in a primary role of clinical provider. No attempt was made at this time to identify and analyze the distribution of CRNA providers in the Reserve Forces, Air or Army National Guard or Public Health Service. Though numerous Reserve, Guard and Public Health Service CRNAs live and work throughout the U. S., no inferences can be made concerning them in this study. Only CRNAs assigned to clinical billets are considered in this study. CRNAs assigned to administrative or educational roles, or in a non-CRNA function as in continuing education were likewise excluded.

A further limitation of this study is the difficulty of collecting stable data due to the rapidly changing military health delivery system. The assignment of the military CRNA is quite variable, and distribution

changes rapidly. Therefore, repeat studies to determine shifts in the provision of CRNA services within the military may need to be undertaken.

Information reflecting outpatient surgical caseloads were not considered. Only inpatient census data were in this study.

One facility is uniquely manned and warrants a note. U. S. Army and Air Force personnel jointly serve the facility at Landstuhl, Germany, and therefore Landstuhl Regional Medical Center is an assignment possibility for both Army and Air Force personnel. In this regard, the 110 military MTFs provide 111 assignment possibilities for military CRNAs.

Summary and Overview

An analysis was made of the relationship of these assignments to branch of service, facility size and billet authorization, and the distribution patterns of all CRNAs. Recent changes have greatly altered the environment within the military. From the recent drawdown following the fall of the Berlin Wall to implementation of the Future Years Defense Program, active duty manpower has been reduced to levels existing prior to the Vietnam War era. Guard and Reserve Units have experienced reductions of over 20% (Perry, 1995). These changes impact all aspects of the military and many quality of life issues are under the constant threat of revision in response to these changes. Though it is common knowledge within the services that the needs of the military come first, adequate discussions concerning personnel assignments may be the most important area that can be influenced by military personnel. CRNAs within the military who know the location and type of facility in which the billets are located have the ability to contribute to their assignment selection, enabling military CRNAs to more effectively exercise this important benefit of military life.

An analysis of the worldwide military CRNA distribution can be a valuable tool for military planners and detailers. In making

assignments, an adequate grasp of billets is maintained by assignment personnel for their respective service. In this period of drawdown and creation of multi-service facilities, knowing the location of CRNA resources in the different services could promote assignments that would maximize the use of personnel already in place, as well as identify unfilled billets. Capability must be maintained at a level required to meet deployment needs. Among medical treatment facilities within proximity of each other, a duplication or lack of service may exist. Maximizing the sharing of resources between MTFs could be advantageous. Knowing locations and number of billets would be of value to those making assignment decisions.

Many CRNAs in the civilian sector have an interest in joining the military. A list of assignment possibilities and facility type could provide these CRNAs with a valuable source of information.

CHAPTER TWO: REVIEW OF THE LITERATURE

Literature Review

An analysis of military CRNA distribution does not exist, nor is there any published study of individual service distribution of CRNAs. Literature pertinent to this study was reviewed, and its relevance to this study discussed in this chapter.

Fallacaro et al. (1996) reported on the national distribution of CRNAs across metropolitan and nonmetropolitan settings. This study focused on the economic, demographic, and health-related differences between urban and rural populations. While the nationwide distribution of CRNAs is of interest to the CRNA professional population as a whole, the worldwide distribution of military CRNAs, as well as characteristics of facilities in which they exist should be of interest to CRNAs within the military, as well as civilian CRNAs.

Perry (1995) discusses implementation of fiscal years 1996 to 2001 Future Years Defense Program, and states that it reflects the department s best judgment as to strategy, force posture and programs needed to protect U. S. interests and sustain America s crucial global leadership role (p. 3). He discusses the management of the drawdown of U. S. forces which directly impacts military personnel in a variety of ways. As military populations change in response to DoD directives, billet locations and facility missions change to meet the needs of the military. Keeping abreast of these changes greatly increases the ability of CRNAs in the military to make constructive contributions to their careers and may provide them a degree of control over aspects of their personal and professional lives.

The Fallacaro et al. (1996) study utilized the Urban/Rural Continuum Code for Metro and Non-metro Counties designed by the U. S. Department of Agriculture to distinguish metropolitan counties by population size and nonmetropolitan counties by their degree of urbanization or nearness to metropolitan areas. In this study, similar

and equally useful data was acquired via the Internet from Environmental Systems Research Institute (ESRI). ArcExplorer (1997) is a limited version of the ArcView software used in the Fallacaro et al. (1996) study. It was downloaded from the Internet, made available by ESRI at no cost through address http:\\www.esri.com. A file containing population distribution information by county was also prepared by ESRI and downloaded. The file contains 1994 projected population distribution by county based on U. S. Census Department figures from 1990. Maps are prepared and population distribution is displayed by file manipulation using the ArcExplorer software. For military planners making assignments, locally available resources could have a direct impact on assignments, allowing either a reduction or increase in personnel requirements at a given military post. Identification of urban centers within proximity of military MTF s would be useful.

The 1997-98 Directory of Federal Medical Treatment Facilities, published by U. S. Medicine (1997) is a comprehensive list of all United States federal medical treatment facilities throughout the world. This directory includes facilities managed by (and for) Amtrak, the U. S. Postal Service, Federal Aviation Administration, National Aeronautics and Space Administration, Tennessee Valley Authority, Departments of State, Veterans Affairs, Health and Human Services, and Defense. Data on outpatient visits, average bed occupancy, and annual surgical hospital admissions are provided. Annual surgical hospital admission is used in this study as an indicator of surgical caseload. The Zip Code identifies the geographical location of each facility and is included in the database.

Levine s 1994 study, Needs assessment for Advanced Practice Nurses for the Uniformed Services, determined the need for the Graduate School of Nursing at the Uniformed Services University of the Health Sciences in Bethesda, Maryland. His needs-assessment focused on three categories of advanced practice nurses, including CRNAs. Levine discusses shortages that exist presently, and those that can be anticipated

because of the attrition of personnel. Staffing situations in the military are in constant flux.

Conceptual Framework

As seen in Figure 1, CRNAs become a military resource of from within its own ranks and from the civilian population. Inflow from the civilian population is provided by either direct recruitment from civilian educational institutions or from a practice setting. In today s non-conscripted force, the latter involves interest by an individual CRNA to pursue military employment. From within the military, numerous avenues for training and advancement exist for members of the armed services. To become a CRNA, a Registered Nurse may apply to a civilian or military CRNA program, graduate from the program, and complete board certification. The military-trained CRNA then commits to compensate the military for the training received by serving as a military CRNA, usually calculated as two months of service for every month of training.

Figure 1 also shows a simplistic view of considerations in the assignment-making process. Initial requests for assignment of preference can be made and, in fact are encouraged, but the needs of the military usually come first.

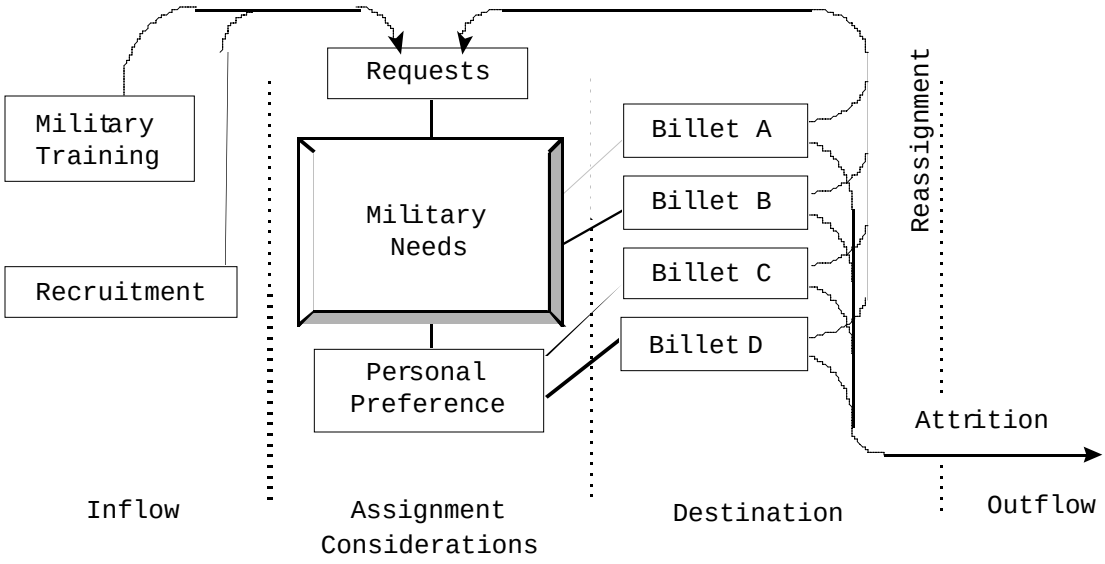

Figure 1.

Inflow and Outflow of Military CRNAs

Once the assignment is made, the destination will routinely be for a period of time from 12 months as in a remote overseas tour to a tour of indefinite length in CONUS. Many variables impact the length of a tour, primary however is the need of the military. Deployments constitute a special circumstance in that, although individuals may be serving at a location thousands of miles from their facility of assignment, for time on station purposes they remain assigned to the facility from which they were deployed. A minimum time on station requirement of usually three years must be completed prior to requesting reassignment. This reassignment will, of course, be in accordance with the needs of the military.

Eventual separation from the service or retirement is unavoidable for military members, and is governed by specific regulation.

Summary

Opportunities and assignments of CRNAs in the military have been discussed. Numerous variables affect military CRNA distribution and some have been documented and analyzed. CRNA distribution in the military is not presently well documented. The goal of this study is to analyze and document the distribution of military CRNAs globally.

CHAPTER THREE: METHODS

Research Design

This analysis is based upon data derived from three comprehensive databases similar to those used in the Fallacaro et al. (1996) study. Active duty military CRNAs were identified from billet distribution information provided by CRNA assignment personnel and military detailers from each of the three services. CRNA billets assigned to those facilities were identified in a similar fashion. This was accomplished for CONUS facilities, Alaska and Hawaii, and the 10 foreign countries and two U. S. Territories in which U. S. Military MTFs with CRNA authorizations are presently positioned.

A complete list of military MTFs was assembled from data in a second database, the U. S. Medicine 1997-98 Directory of Federal Medical Treatment Facilities (1997). Only MTFs with a surgical capability were considered for inclusion. This comprises a practical list of potential assignments for CRNAs within the military.

The third database is the 1994 projection of population distribution by county from U. S. Census Department statistics and provided by ESRI. Counties were divided into three classifications based on individual population (Table 2).

Table 2.

County Classification and Population Distribution

Classification	Population
Metro	Greater than 39,839
Urban	14,009 – 39,839
Rural	Less than 14,009

This study replicates a portion of the Fallacaro et al. (1996) study by analyzing analysis of population and CRNA staffing data. Manpower and billet information was provided for each MTF. The second database containing U. S. Military Medical Facilities was created from the 1997-98 Federal Medical Facility Directory published by U. S. Medicine. The database included total inpatient beds, annual surgical admissions and Zip Code identification. Facilities were classified according to three categories shown in Table 1.

Using these databases, the location of each CRNA and facility was plotted on a world map. Clusters of CRNA and facility locations became apparent during data analysis. Also, the number of CRNAs assigned to each facility was recorded. An analysis of the distribution of military CRNAs in the MTF s classification shown in Table 1 was conducted. Total numbers of CRNAs assigned to each of the three categories of facilities was computed and analyzed.

The third database was employed to identify CRNA and MTF locations. Projected civilian population distribution for 1994 as calculated by the U. S. Bureau of the Census was utilized to provide information regarding urbanization of a county in which a MTF is located (Table 2). Clusters of CRNA population and U. S. military MTFs were identified and their proximity to centers of population were determined. By applying U. S. county population information to the data containing CRNA and military MTF placement, a map displaying national distribution of military CRNAs across metropolitan, urban and rural centers was constructed.

Study Population

The nurse anesthesia consultants for each service provided a list of their CRNAs and the current requirements (or billets) for CRNAs at each location, including the rank and experience level requirements.

This list was matched with case-load categories created from the list of military MTFs from the U. S. Federal Medical Treatment Facilities Directory. This information was used to determine the percent of manning for each MTF characteristic, military service and for the total military overall.

Data Analysis

Statistical analysis consisted of computing summary measures of important variables. These measures include means and percentage distributions. The standard analysis provided meaningful data on the distribution of CRNA's in the military. IRB approval by the Uniformed Services University was deemed unnecessary as no human subjects were studied. Service consultants were briefed on the nature of this study prior to receipt of their respective service CRNA assignment data.

Summary

This study used information derived from existing databases to identify the global distribution of CRNAs in the military. The location and proximity to centers of population of the MTFs in which CRNAs are assigned was also determined.

CHAPTER FOUR: RESULTS

Presentation

Each military service through their respective anesthesia consultant provided information concerning distribution including actual as well as authorized manning levels of military CRNAs. These data were provided as current in September 1997. Total numbers of CRNAs assigned to authorized billets as well as the numbers of authorized billets of each service are shown in Table 3.

Table 3.

Authorized and Assigned CRNA Manning of the Military Services, by Service, September 1997

Service	Authorized	Assigned	Percent Assigned
USA	238	213	89
USN	117	114	97
USAF	223	222	100
Total	578	549	95

MTF information was taken from the U. S. Medicine Directory of Federal Medical Facilities, previously discussed. A composite database comprised of annual outpatient visits, annual admissions, inpatient beds, average facility bed occupancy, and average inpatient medical and surgical census was prepared (Appendix A). A listing of CRNAs assigned and authorized to these various MTFs are also shown.

As presented in Table 4 there are 578 CRNA authorized billets in the three military services: 532 CRNA billets are assigned to Military Inpatient MTFs and 46 CRNA billets are in other areas that include outpatient departments or CRNAs assigned to a deployable status. The assignments for CRNAs by service are shown in Table 5. CRNAs not

included are those assigned as educational faculty in training programs and those serving in administrative positions.

Table 4.

Authorized Military CRNA Billets, by Service, September 1997

Service	In-patient facilities	Non-inpatient function	Total Number	Total Percent
USA	205	33	238	41.2
USN	108	9	117	20.2
USAF	219	4	223	38.6
Total	532	46	578	100.0

Table 5.

Inpatient facilities and Non-inpatient functions to which CRNAs are Assigned, by Service, September 1997

Service	CRNAs Assigned to Inpatient Facilities	CRNAs Assigned to Non-inpatient function	Total
USA	32	9	41
USN	27	3	30
USAF	52	2	54
Total	111	14	125

The U. S. Medicine 1997-98 Directory of Federal Medical Treatment Facilities (1997) publishes annually all MTFs and their characteristics. MTF characteristics include name, number and service of facilities, the number of inpatient beds in a given facility, and the annual average daily inpatient and surgical inpatient census per year. Dividing the number of CRNA billets authorized at each facility into a specific facility characteristic calculates the CRNA billet per facility characteristic being considered. These data are displayed in Table 6 and include the number of CRNA billets.

Table 6.

Military Medical Treatment Facility Characteristic and CRNA Distribution, by Service, September 1997

	USA	USN	USAF	Total
CRNA Billets	205	108	219	532
Facilities	32	27	52	110
Billets per Facility	6.4	4.0	4.2	4.8
Beds	4103	1665	2159	7927
Beds per Billet	20.0	15.4	9.9	14.9
Daily Inpatient Census	2454	1169	1438	5061
Daily Inpatients per Billet	12.2	10.8	6.6	9.5
Daily Surgical Inpatient Census	598	243	333	1174
Daily Surgical Inpatients per Billet	2.9	2.3	1.5	2.2

Figures 2 – 5 display each service facility characteristics and the number of CRNAs assigned. Dividing the total number of CRNA billets by the number of facilities in a given service provides an average billet per facility ratio. These data are shown in Figure 2.

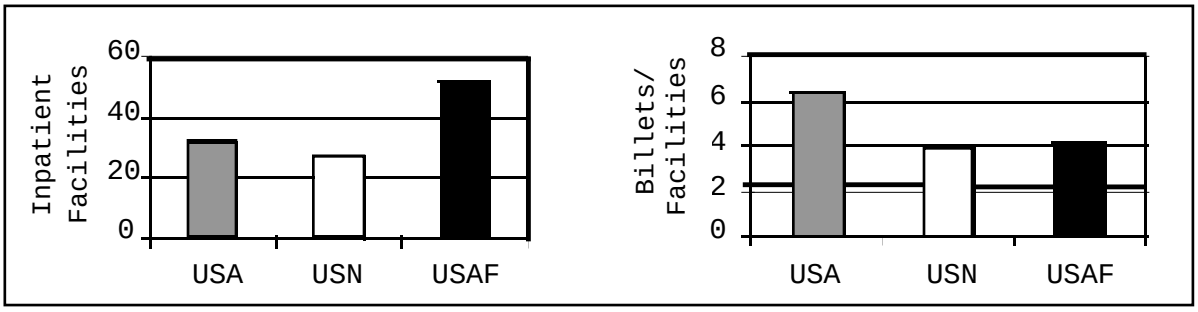

Figure 2.

Number of CRNA Billets per Facility, September 1997

Dividing the total number of number of beds maintained by each service by the number of billets provides the ratio of inpatient beds per billets in each service (Figure 3).

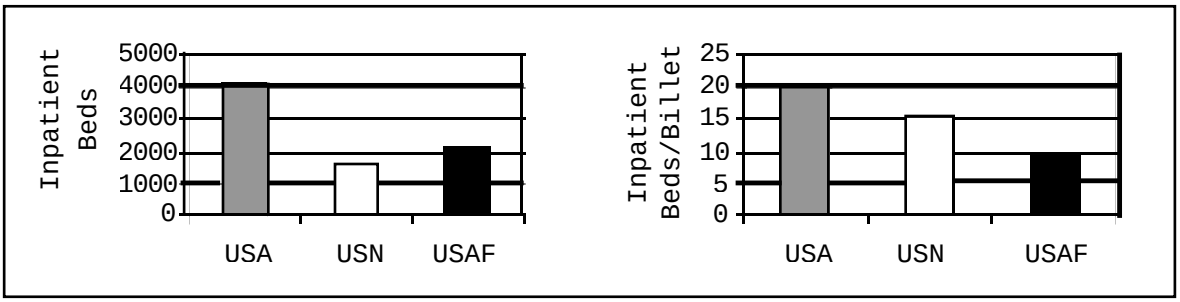

Figure 3.

Number of Inpatient Beds per CRNA Billet, September 1997

Dividing the number of daily inpatient census with the CRNA billets provides a ratio of inpatient census to billet (Figure 4).

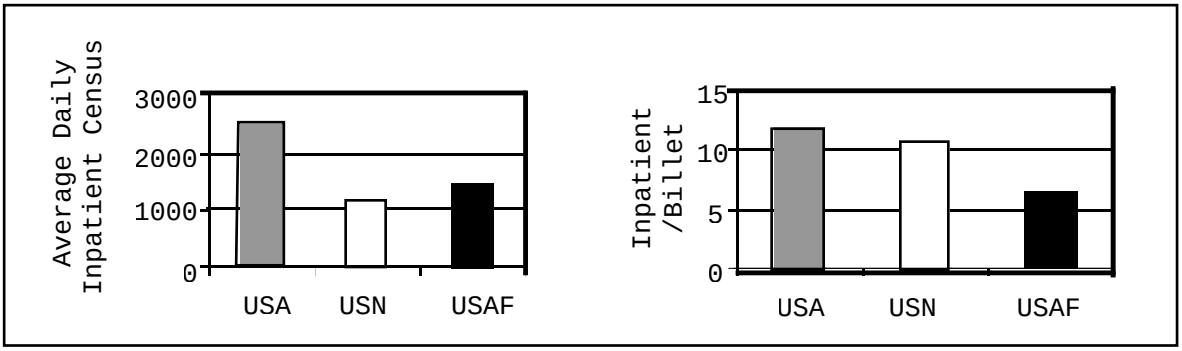

Figure 4.

Number of Hospital Inpatients per CRNA Billet, September 1997

Dividing the average daily surgical census by the number of CRNA billets provides a ratio of surgical inpatient to billets (Figure 5).

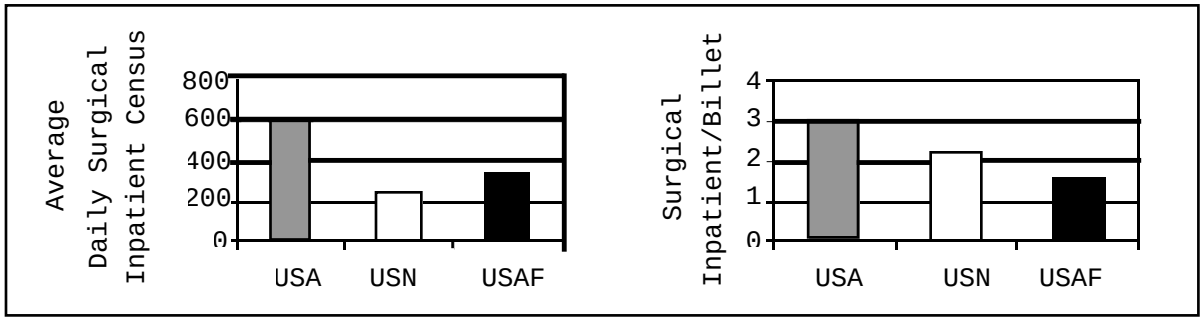

Figure 5.

Number of Hospital Surgical Inpatients per CRNA Billet, September 1997

CRNA Distribution by Facility Classification

There are 26 inpatient medical treatment facilities with more than 80 inpatient beds in the three military services (Table 7). There are 279 billets for CRNAs in these large facilities.

Table 7.

CRNA Billets in Facilities with more than 80 beds, by Service, September 1997

	Number of Facilities	Number of CRNA Billets	CRNA Billets per Facility
USA	*15	152	10.1
USN	6	51	8.5
USAF	*6	76	10.8
Total	26	279	10.3

*Landstuhl Regional Medical Center is a jointly manned facility

There are 39 military inpatient facilities within the medium category of 21 — 80 inpatient beds (Table 8). These 39 facilities are billeted for 142 CRNAs.

Table 8.

CRNA Billets in Facilities with 21 to 80 beds, by Service, September 1997

	Number of Facilities	Number of CRNA Billets	CRNA Billets per Facility
USA	15	49	3.3
USN	8	30	3.8
USAF	16	63	3.9
Total	39	142	3.6

Forty-five military inpatient facilities have less than 21 beds which have 111 CRNA billets (Table 9).

Table 9.

CRNA Billets in Facilities with less than 21 beds, by Service, September 1997

	Number of Facilities	Number of CRNA Billets	CRNA Billets per Facility
USA	2	4	2.0
USN	13	27	2.1
USAF	30	80	2.6
Total	45	111	2.5

Distribution of CRNAs reflects the relative size of facilities between services, as larger facilities would tend to have increased surgical capabilities and therefore have an increased need for CRNA services. A substantial number of CRNAs in the military are assigned to facilities in pairs or in three s. Fifty-six percent of military facilities have 2 or 3 CRNAs authorized. Two Navy hospitals are authorized one CRNA, and one Army facility has 23 CRNAs authorized. The distribution of CRNAs authorized by size of military inpatient MTFs is displayed in Figure 6.

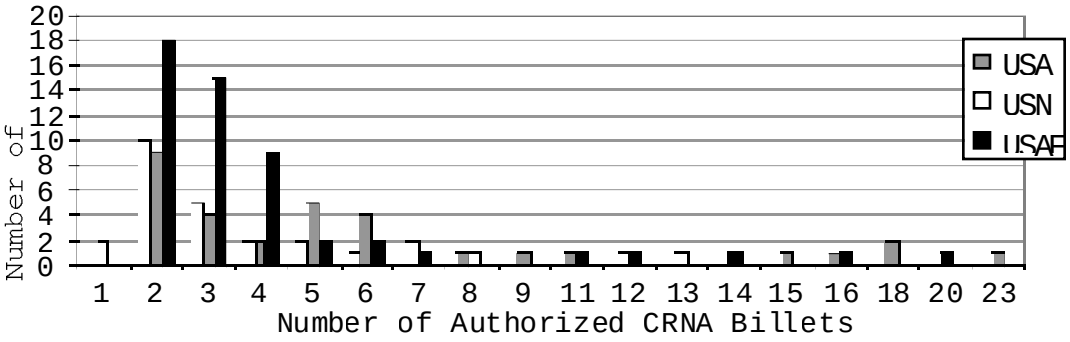

Figure 6.

CRNA Distribution by Size of Military Medical Treatment Facility, by Service, September 1997

Figure 7 displays comparisons of CRNA billets to MTF inpatient beds, inpatient census, and surgical inpatient census.

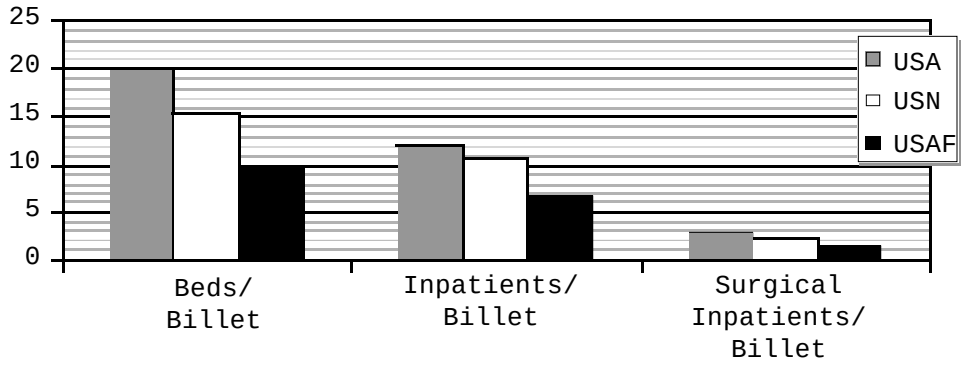

Figure 7.

Facility Characteristics Compared to CRNA Billets, by Service, September 1997

Military CRNA and Civilian Population Distribution

U. S. population distribution data was acquired through an Internet download available through ESRI and is compiled from U. S. Census projections of population in 1994 based on 1990 population levels. U. S. population distribution is displayed in Figures 8 and 9.

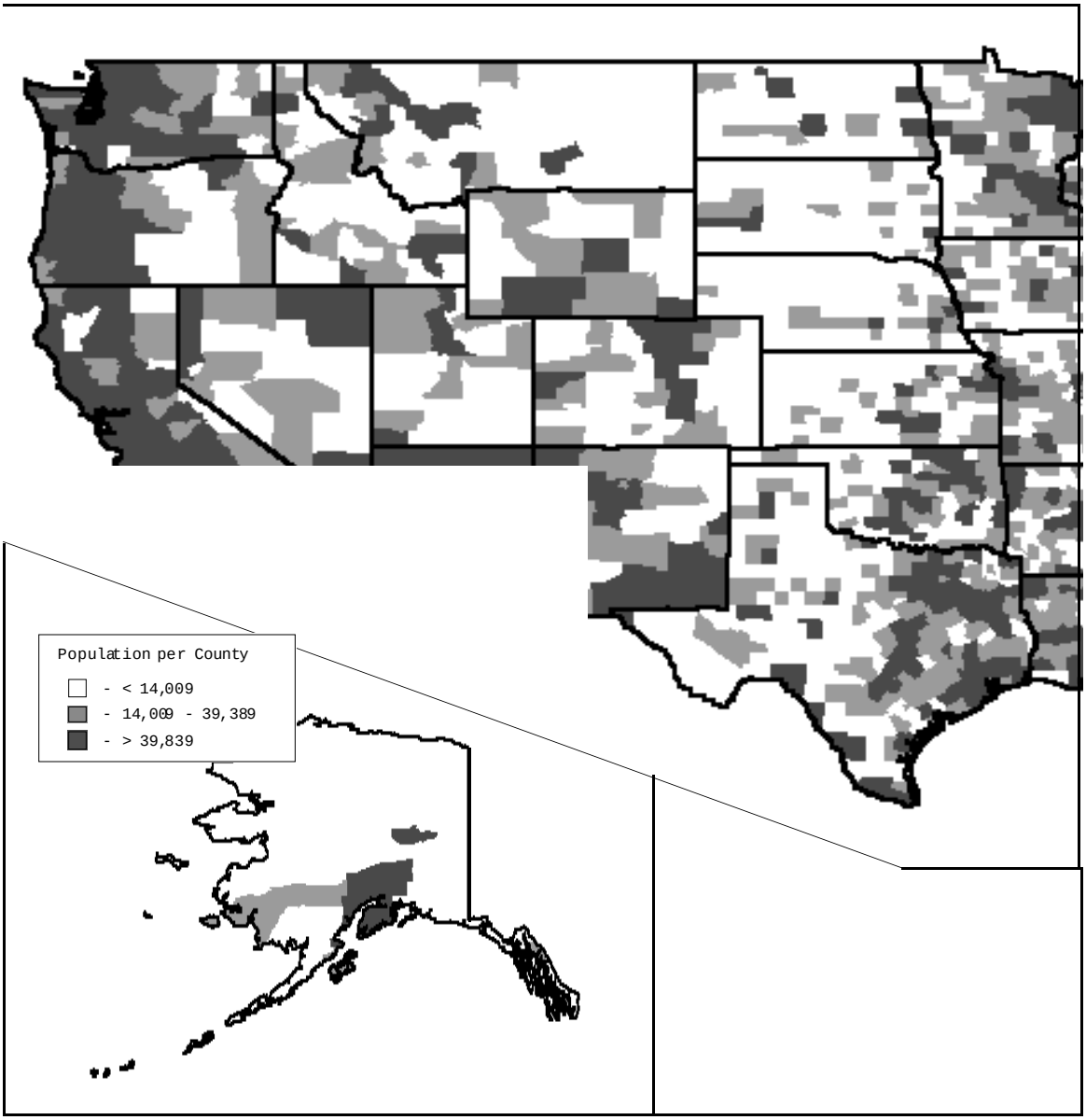

Figure 8.

Western U. S. Population Distribution, 1994

CRNA Distribution by Facility Classification within each Service

There are 110 inpatient MTFs and two outpatient MTFs that maintain surgical capabilities within the DoD. Distribution of and service responsible for those facilities are displayed in Figures 10, 11 and 12.

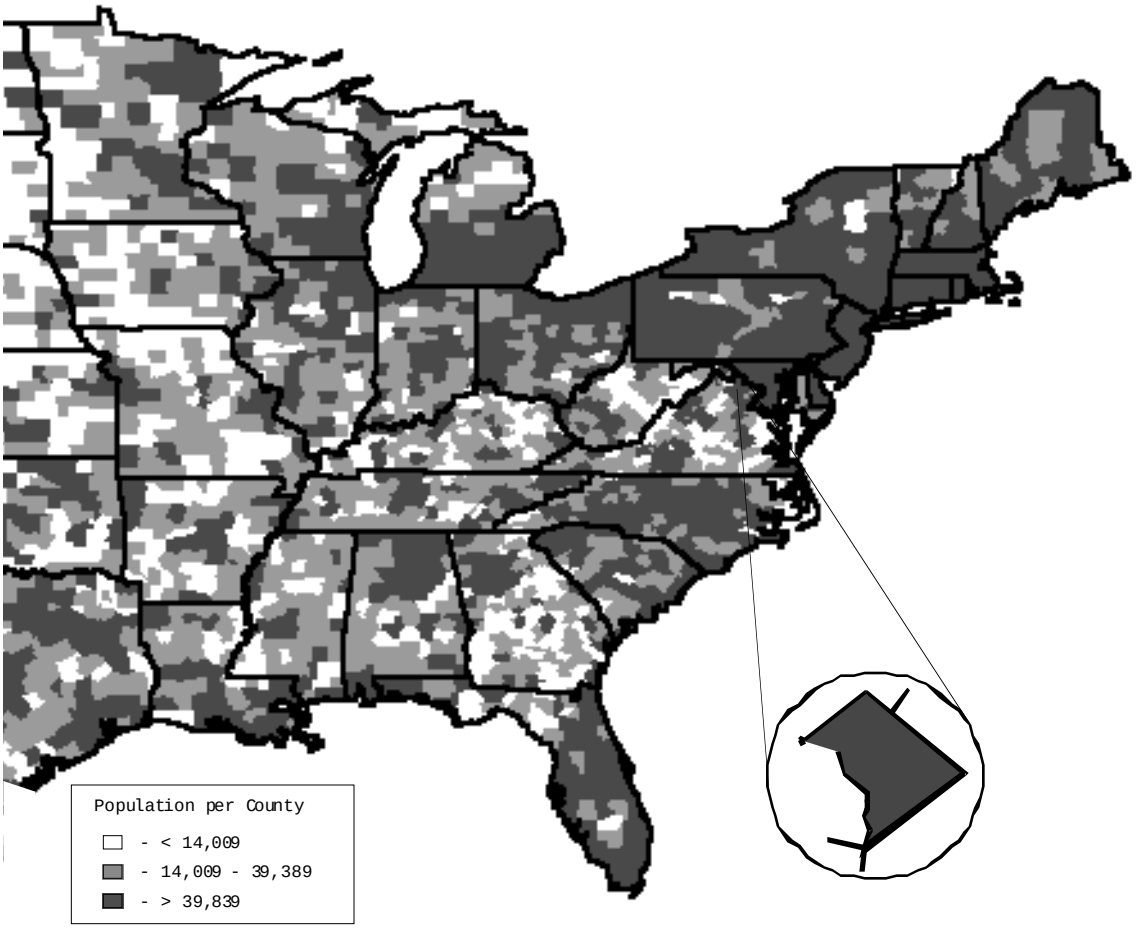

Figure 9.

Eastern U. S. Population Distribution, 1994

U. S. Army

There are 4,103 inpatient beds presently maintained worldwide in 32 U. S. Army inpatient facilities, more than the other two services combined. The U. S. Army also has more large inpatient facilities than the other services; nearly half of the facilities are classified as large (Table 10). These facilities provide billets for 205 CRNAs. The largest U. S. military medical facility is Walter Reed Army Medical Center in Washington D. C. with 567 inpatient beds and 23 authorized CRNA billets. Though there are 32 U. S. Army MTFs, the seven largest U.

S. Army facilities maintain more than half of all beds maintained at U. S. Army facilities (2,282), and account for 106 of the 205 authorized CRNA billets within the U. S. Army.

Table 10.

Size of Inpatient Facilities maintained by the U. S. Army, September 1997

Size* of Facility	Facilities		CRNA Billets
	Number	Percent	
Large	15	46.8	152
Medium	15	46.8	49
Small	2	6.4	4
Total	32	100.0	205

* See table 1 for Bed Size

There are four U. S. Army inpatient facilities outside the United States, three in Germany and one in Japan (Figure 12). These facilities maintain 420 inpatient beds and provide billets for 17 CRNAs. One facility, Landstuhl Regional Medical Center in Landstuhl, Germany is designated a joint-service facility, with manning provided by both the U. S. Army and the U. S. Air Force. Professional staffing responsibilities are shared by both services, and therefore are less for each service than the facility characteristics themselves might indicate. This joint service manning is somewhat unique in the military at this time. It is being studied as a possibility for other facilities to incorporate.

The U. S. Army has an additional 27 clinical CRNA billets at 9 sites outside the inpatient area (Appendix A). These Fast Team units are maintained fully manned (Kowell, 1998) at a high degree of readiness and are either presently deployed or exist in a deployable status.

Figure 10.

Distribution of U. S. Military Medical Treatment Facilities with Authorized CRNA Billets in the Western U. S., September 1997

U. S. Navy

There are 1,665 inpatient beds among 27 inpatient medical facilities under the control of the U. S. Navy worldwide (Table 11).

The largest facility is Naval Medical Center San Diego with 320 inpatient beds, and with 13 authorized CRNA billets. The smallest is a four bed hospital in Keflavik, Iceland, with a billet for one CRNA. All but one facility are located in centers with some urban activity and provide some level of input to the local economies, be it care to local national employees of the base or through sharing of resources between U. S. and local host nation communities. An exception to that is the Naval Hospital at Guantanamo Bay, Cuba, to which access by the local population is not allowed. There are presently 108 billets for CRNAs at these 27 naval inpatient facilities.

Table 11.

Size of Inpatient Facilities maintained by the U. S. Navy, September 1997

Size* of Facility	Facilities		CRNA Billets
	Number	Percent	
Large	6	22.2	51
Medium	8	29.6	30
Small	13	48.2	27
Total	27	100.0	108

*See table 1 for Bed Size

The U. S. Navy maintains nine inpatient medical facilities outside the 50 United States (Figure 12). These are located in the Caribbean, Pacific Rim, and Mediterranean, and constitute 255 of the 1,665 inpatient beds in U. S. Naval Medical Facilities. Of the 108 CRNA billets in Navy facilities, 20 are placed overseas.

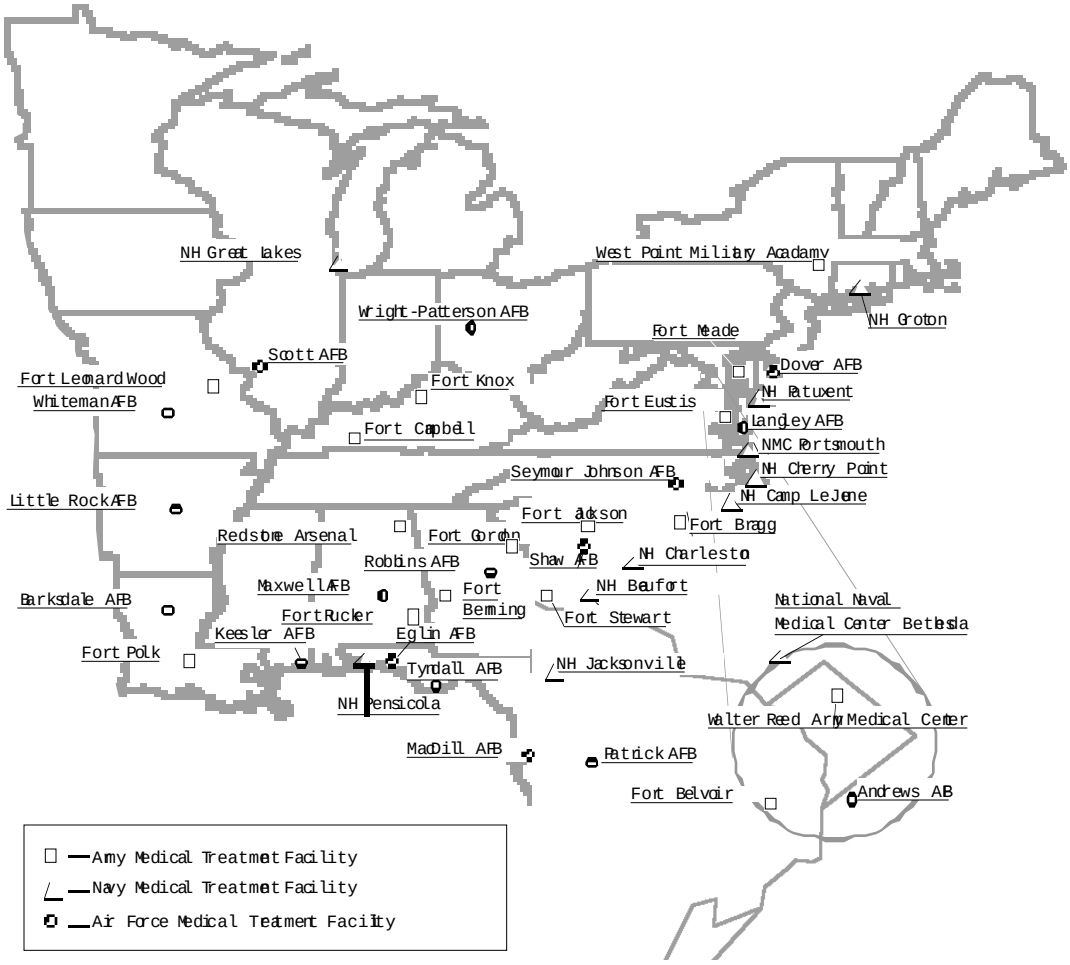

Figure 11.

Distribution of U. S. Military Medical Treatment Facilities with Authorized CRNA Billets in the Eastern U. S., September 1997

There are 31 CRNA billets outside the of medical facilities in the U. S. Navy. The Navy maintains and provides personnel to two modern hospital ships; the USNS Mercy and USNS Comfort. The USNS Mercy, based in San Diego, is billeted for 13 CRNAs. This manpower is routinely assigned to NMC San Diego as the USNS Mercy NMC San Diego Attachment . When deployed, the assigned manpower attaches to the ship, and manpower need at NMC San Diego is back-filled by either reserve or civilian staff. The USNS Comfort, based in Baltimore, Maryland, has 8 CRNA billets. Like the USNS Mercy, manpower is routinely stationed

elsewhere. Manpower allocated for the USNS Comfort performs routine duty at NNMC Bethesda, MD. Nine surgical teams designated to support Navy and Marine Corps personnel are also manned with a single CRNA each for deployment to assist in safe acquisition and delivery of the sick and injured to an appropriate medical treatment facility. These teams are prepared for short notice deployment and are maintained in a deployable status.

U. S. Air Force

The U. S. Air Force has the largest number of inpatient medical facilities. There are 52 Air Force hospitals containing 2,159 inpatient beds worldwide (Table 12). The U. S. Air Force maintains more beds in smaller facilities with only 619 beds (29% of the total beds) in the 38 primary and basic Air Force facilities (73% of the total facilities).

Table 12.

Size of Inpatient Facilities maintained by the U. S. Air Force, September 1997

Size* of Facility	Facilities		CRNA Billets
	Number	Percent	
Large	6	11.6	76
Medium	16	30.7	63
Small	30	57.7	80
Total	52	100.0	219

*See Table 1 for Bed Size

There are 9 inpatient facilities maintained by the U. S. Air Force outside the United States, Europe, Asia, and North America (Figure 12). These facilities constitute 365 (17%) of the 2,159-inpatient beds of the U. S Air Force and have 24 CRNA billets. Since manning at the facility at Landstuhl, Germany is shared with the Army, the total Air CRNA billets, are less than the characteristics of the facility might indicate necessary.

Figure 12.

Distribution of U. S. Military Medical Treatment Facilities with Authorized CRNA Billets Overseas, September 1997

As of September 1997, two facilities serve exclusively in an outpatient, or Super-Clinic status, and have four CRNA billets. The Air

Force has a deployment responsibility in service-specific missions and rotations shared with other services. This capability is maintained in addition to daily job functions. During times of deployment, these personnel in their present jobs are back-filled, usually by other active or reserve personnel.

A difference exists in the types of facilities maintained by each of the three services, and staffing of CRNAs is impacted by that difference. The U. S. Air Force has the greatest number of small facilities (58%) and the highest CRNA to military inpatient surgical bed ratio compared to the U. S. Army and U. S. Navy. Nearly all of the U. S. Army facilities are large and medium (Table 13).

Table 13.

Percent of facilities maintained by each service, by size, September 1997

Size* of Facility	Percent of Facilities		
	USA	USN	USAF
Large	46.8	22.2	11.6
Medium	46.8	29.6	30.7
Small	6.4	48.2	57.7
Total number of facilities	32	27	52

*See table 1 for Bed Size

CHAPTER FIVE: CONCLUSIONS

As of September 1997, 95 percent of authorized positions are manned in all of the U. S. Army, Navy, and Air Force MTFs (Table 3). Actual military CRNA manning can vary by as many as 10 individuals within a month (Kowell, 1998). CRNA authorizations tend to be more stable. The surgical activity level of a facility may provide insight into allocation of CRNA resources and how this may manifest itself in the service branches.

Table 6 shows the number of inpatient beds maintained by each service in all of their facilities, the average daily census, the average inpatient surgical census and the number of authorized CRNAs in each service s inpatient facilities for September 1997.

The Army has an average of two more CRNAs per facility (6.4) than the Navy or the Air Force (4.0 and 4.2 respectively). As previously discussed, the Army maintains a greater number of large MTFs than the other services. Larger facilities require an increased need for all types of staff.

The analysis of CRNA billets in each service compared to the number of inpatient beds shows that the Air Force had the highest staffing levels with one CRNA billet for every 10 inpatient beds, while the Navy has 15 beds and the Army 20 beds per authorized billet. This may result because the Air Force has smaller and more numerous facilities with 29% of the Air Force inpatient beds in 73% of the Air Force facilities. There are 395 inpatient beds in the 30 small Air Force facilities while the Army has only 39 beds in its two small facilities and the Navy maintains 150 beds in 13 small facilities. The greater CRNA billet-to-inpatient bed ratio in the Air Force than the other services may be due to the greater number of small facilities.

The analysis of inpatient census to CRNA billets showed that one CRNA is authorized for every 12 inpatients in the Army, 11 inpatients in the Navy, and 6.5 inpatients in the Air Force. All military facilities require surgical services to be available on or near each military base.

The need for military MTFs is especially high in locations remote from civilian populations where many U. S. Air Force bases exist. A surgical capability maintained on any U. S. Air Force base is typically staffed with at least two CRNAs. In many U. S. Air Force MTFs the surgical caseloads alone would not justify the billets but the larger requirement of mission readiness does support this manpower requirement. These allowances are made in 30 of 52 (58%) U. S. Air Force small MTFs. No attempt was made in this study to account for the number and use of anesthesiologists in the service branch which may influence CRNA distribution. The U. S. Air Force is unable to consolidate its resources because of its need to maintain remote bases, and separate and independently functioning MTFs to attain its mission of readiness.

Within the inpatient population and the array of clinical services provided exists the subset of surgical inpatients. This group is a more accurate indicator of the actual workload of the CRNA. The analysis of the average surgical inpatients in each service divided by the number of CRNA billets showed that the Army and Navy average one CRNA for every 2.9 and 2.3 surgical inpatients respectively. The Air Force reflects better staffing with one CRNA for every 1.5 surgical inpatient. This difference exists due to the number of MTFs maintained by the three services and their different mission requirements. An analysis of these data shows the U. S. Air Force to have significantly more MTFs. Many of these are smaller MTFs supporting the missions of smaller bases.

The size of a medical treatment facility can be determined from a variety of parameters. In this study, the primary discussion is determined from the number of beds that a facility maintains for patient use at a given time. Although there is a close correlation between facility size and the number of CRNA billets, it is more likely that CRNA billets are primarily staffed according to activity level of the surgical department of a given facility. It is assumed that larger facilities would have more surgical procedures and services. From the perspective of the CRNA, high annual admissions and a large number of inpatient beds support an increased inpatient surgical census and an

increased workload. More recently, an important factor influencing CRNA billets in military facilities is outpatient surgeries. Some of the larger MTFs are being considered for conversion into outpatient centers and designated Super-Clinics . These facilities will continue to perform surgical procedures but will no longer have inpatients. Some military facilities have made that change, and the need for more changes is being evaluated.

There must be at least one CRNA at each facility offering surgical services, which may explain the better staffing ratios in the service with the greatest number of small facilities. The Army staffs the largest number of large facilities, the Navy staffs the fewest number of large facilities and the Air Force staffs the largest number of small facilities (Figure 6).

There is little correlation between population densities and military CRNA assignments (Figures 8 and 9). Military bases are not dependent upon a local economy for their resources. In fact, as U. S. military base closures worldwide take place, some of the more remotely located bases are kept operational. Larger MTFs tend to be within larger bases and larger bases employ more civilians from the local economy. Larger bases, especially with large medical facilities, often attract military retirees which increases the surrounding community population. Military CRNAs assigned to bases in remote rural areas may bring unique skills to a community which without the military might not be available.

There is a difference in how each service staffs CRNAs in their facilities. The Army has larger facilities than the other services. The Navy has fewer facilities and with the exception of National Naval Medical Center in the Washington DC metropolitan area, all of these facilities are coastal. The Air Force has more facilities with the majority of them small. CRNA staffing at these facilities appears to be based on surgical activity level.

There are presently authorizations for 532 CRNAs in 110 inpatient MTFs in the U. S. Military and 46 clinical billets authorized in 14 non-

inpatient functions among the three services. Distribution of CRNAs in the military is variable. Placement of military MTFs occurs wherever military forces are, including remote military bases, and in deployment situations. As military downsizing concludes, personnel resources have become more scattered and analysis of need and availability becomes essential. In many instances, this trend is accompanied by a reduction of capability or change in mission requirements in those remaining medical facilities. This study has identified localities with multiple large military MTFs and concentrations of the military CRNA population. High density areas for military CRNAs are San Antonio, Texas, Washington DC, Chesapeake Bay, and the Puget Sound, WA areas. These areas could be assessed for additional cross utilization, especially during time of remote manpower assignment and deployment. Likewise, if used in tandem with civilian CRNA databases such as the one created by Fallacaro et al. (1996), further cross utilization of CRNAs between civilian and military medical facilities could be analyzed.

During time of military action and deployment, identification of a service CRNA allocation is maintained by each service. Information on manpower allocation from each service may aide military planners in determining which base or medical facility to select troops for deployment that would have the least adverse impact on locally available military health care. Sharing of CRNA resources could also be easily facilitated between the time of deployment and arrival of replacement manpower.

This type of periodic analysis may be useful to the military to provide information on the distribution of CRNAs in the military services. Databases used in this study are updated on a regular basis at little to no expense to the Department of Defense. U. S. Medicine, Inc updates the U. S. Medicine Directory of Federal Military Medical Facilities annually with input from all medical health agencies. The U. S. Census is done every 10 years. Current CRNA manpower distribution for each service is maintained by the respective service chiefs and detail officers. Analysis of these data on a regular basis could reveal CRNA manpower trends for the various services that could eventually lead to a greater sharing of resources. Other military personnel resources could also be analyzed using this model. This may prove to be useful in the consolidation of medical capability, as manpower resources become more limited.

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APPENDICIES

Appendix A

Medical Treatment Facility Demographics - 1997

		Facility Name	State	Zip Code	Military Branch	Inpatient Beds	Avg Bed Occupancy	Avg IP Surgical	CRNA Authorized	CRNA Assigned
Large	1	Walter Reed Army Medical Center	DC	20307-5000	Army	567	427	152	23	17
	2	Lackland AFB (Wilford Hall)	TX	78236-5300	AF	390	311	92	20	19
	3	Trippler Army Medical Center	HI	96859-5000	Army	355	249	54	18	18
	4	NMC San Diego	CA	92134-5000	Navy	320	252	57	13	12
	5	Fort Sam Houston (Brooke)	TX	78234-6200	Army	311	233	81	8	8
	6	Madigan Army Medical Center	WA	98431-5000	Army	304	181	45	18	18
	7	Fort Bliss (Beaumont)	TX	79920-5001	Army	280	151	39	16	14
	8	NMC Portsmouth	VA	23708-5000	Navy	260	142	35	12	12
	9	Fort Gordon (Eisenhower)	GA	30905-5650	Army	233	180	44	15	12
	10	Fort Bragg (Womack)	NC	28307-5000	Army	232	104	18	9	9
	11	NNMC Bethesda	MD	20889-5600	Navy	195	157	39	8	8
	12	Landstuhl, GE, APO (Army)	AE	09180-3460	Army	190	97	16	5	7
		Landstuhl, GE, APO (AF)	AE	09180-3460	AF				3	3
	13	Travis AFB (David Grant)	CA	94535-1800	AF	185	151	34	16	15
	14	Fort Hood (Darnall)	TX	76544-5063	Army	162	109	15	11	10
	15	Fort Campbell (Blanchfield)	KY	42223-1498	Army	137	68	13	6	6
	16	Keesler AFB	MS	39534-3576	AF	135	106	30	14	13
	17	Fort Carson (Evans)	CO	80913-5000	Army	116	62	10	2	2
	18	Yongsan, KO, APO	AP	96205	Army	110	62	12	4	4
	19	Andrews AFB (Malcolm Grow)	MD	20331-6600	AF	110	91	17	11	10
	20	NH Camp Pendleton	CA	92055-5191	Navy	110	81	10	6	6
	21	Fort Stewart (Winn)	GA	31314-5300	Army	109	49	8	6	4
	22	Wright-Patterson AFB	OH	45443-5529	AF	100	86	24	12	12
	23	Fort Benning (Martin)	GA	31905-6100	Army	100	64	9	6	6
	24	NH Camp LeJeune	NC	28547-0100	Navy	95	68	10	7	7
	25	Fort Jackson (Moncrief)	SC	29207-5700	Army	91	53	8	5	4
	26	NH Okinawa, JP, FPO	AP	96362-1600	Navy	90	69	7	5	5
Medium	27	NH Jacksonville	FL	32214-5000	Navy	80	59	14	7	7
	28	Fort Sill (Reynolds)	OK	73503-6300	Army	80	40	6	3	3
	29	Elmendorf AFB	AK	99506-3700	AF	75	33	6	4	5
	30	Fort Leonard Wood	MO	65473-5700	Army	75	38	6	5	5
	31	NH Great Lakes	IL	60088-5230	Navy	75	55	6	3	3
	32	Fort Knox Ireland)	KY	40121-5520	Army	71	25	6	6	5
	33	Fort Belvior (Dewitt)	VA	22060-5141	Army	68	40	5	5	5
	34	Eglin AFB	FL	32542-1282	AF	65	58	9	7	8
	35	NH Pensacola	FL	32512-0003	Navy	65	47	8	5	5
	36	Sheppard AFB	TX	76311-3478	AF	65	48	5	3	3
	37	NH Bremerton	WA	98312-1898	Navy	60	36	5	4	4
	38	Wurzberg, GE, APO	AE	09244	Army	60	24	5	3	2
	39	Lakenheath, Eng, APO	AE	09464-0230	AF	60	27	4	4	4
	40	Heidelberg, GE, APO	AE	09102-3304	Army	60	28	3	4	4
	41	Fort Polk (Bayne-Jones)	LA	71459-6000	Army	58	25	4	3	3
	42	NH Guam, Guam, APO	AP	96538-1600	Navy	55	21	8	2	2
	43	Fort Wainwright (Bassett)	AK	99703-7300	Army	55	16	3	2	2

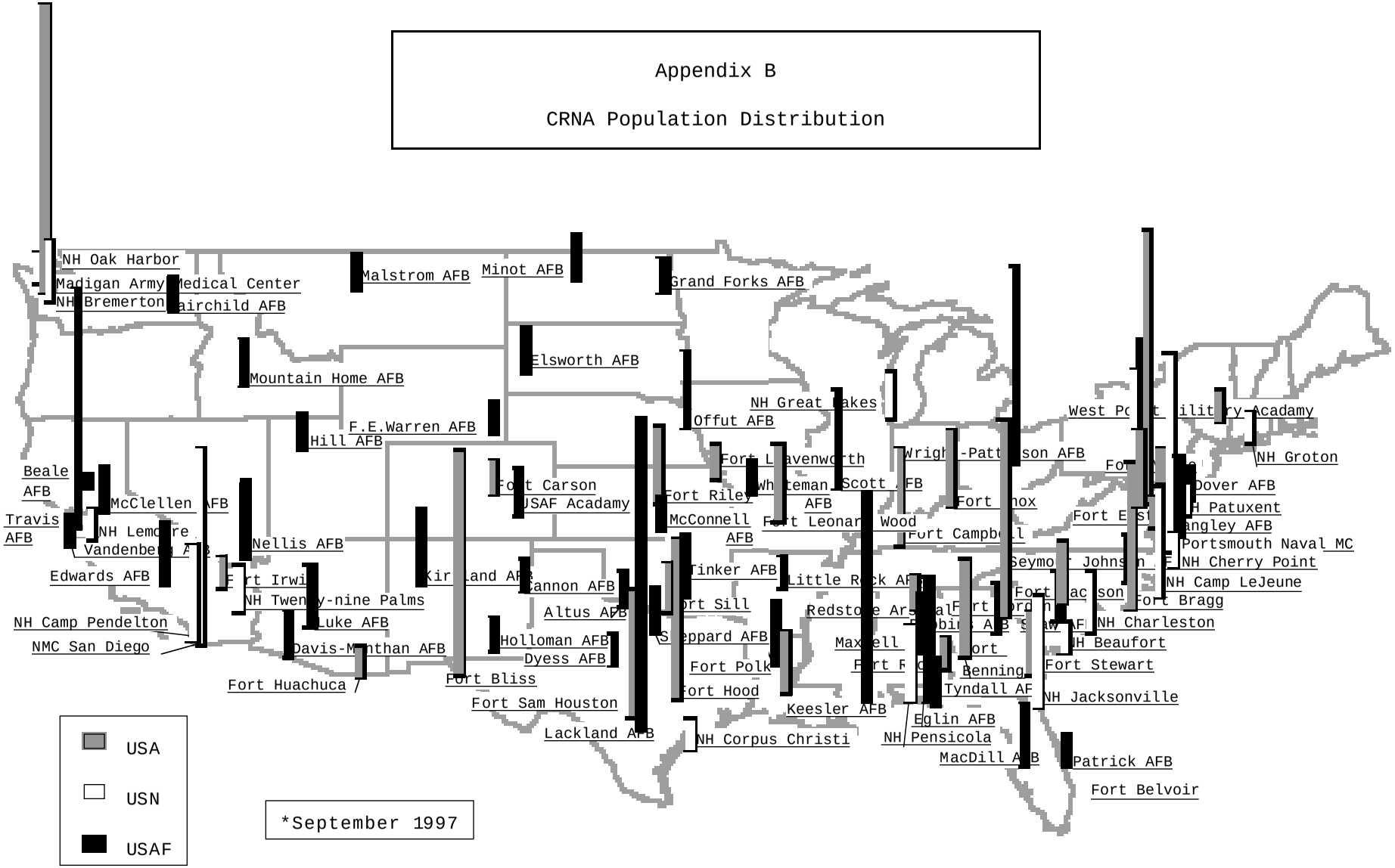
		Facility Name	State	Zip Code	Military Branch	Inpatient Beds	Avg Bed Occupancy	Avg IP Surgical	CRNA Authorized	CRNA Assigned
Medium	44	Fort Meade (Kimbrough)	MD	20755-5800	Army	45	19	7	2	2
	45	Fort Riley (Irwin)	KS	66442-5037	Army	45	38	6	5	5
	46	Scott AFB	IL	62225-5252	AF	45	38	8	6	6
	47	NH Yokosuka, JP, FPO	AP	96350-1600	Navy	45	31	5	3	3
	48	NH Charleston	SC	29405-7769	Navy	40	24	11	4	4
	49	USAF Academy	CO	80840-4000	AF	40	32	6	4	3
	50	Langley AFB	VA	23665-2080	AF	40	34	5	4	5
	51	Maxwell AFB	AL	36112-6219	AF	40	11	3	4	4
	52	Fort Rucker (Lyster)	AL	36362-5083	Army	36	15	6	2	2
	53	Davis-Monthan AFB	AZ	85707-4405	AF	35	14	4	3	3
	54	Offutt AFB	NE	68113-2160	AF	30	22	5	5	5
	55	Nellis AFB	NV	89191-6601	AF	30	20	4	4	5
	56	Fort Huachuca (Bliss)	AZ	85613-7040	Army	30	8	3	2	2
	57	Fort Eustis (McDonald)	VA	23604-5548	Army	30	5	2	2	2
	58	West Point MA (Keller)	NY	10996-1197	Army	29	20	5	3	2
	59	McClellan AFB	CA	95652-1074	AF	29	11	4	3	3
	60	MacDill AFB	FL	33621-1607	AF	25	15	3	4	4
	61	Redstone Arsenal	AL	35809-7000	Army	25	7	3	2	2
	62	Yokota, JP, APO	AP	96328	AF	25	11	2	3	4
	63	Shaw AFB	SC	29152-5019	AF	25	8	2	3	3
	64	NH Rota, SP, FPO	AE	09645-2500	Navy	25	23	2	2	2
	65	Fairchild AFB	WA	99011-8701	AF	25	2	1	2	2
Small	66	Luke AFB	AZ	85309-1525	AF	20	16	4	6	4
	67	Tinker AFB	OK	73145-8102	AF	20	16	3	4	4
	68	NH Beaufort	SC	29902-6148	Navy	20	15	3	2	2
	69	Tyndall AFB	FL	32403-5612	AF	20	15	2	3	3
	70	NH Twenty-nine Palms	CA	92278-8250	Navy	20	14	2	3	3
	71	Incerlik, Turkey, APO	AE	09824-5185	AF	20	6	1	3	3
	72	Dover AFB	DE	19902-7307	AF	20	7	1	2	2
	73	Fort Irwin (Weed)	CA	92311-5065	Army	20	11	1	2	2
	74	Fort Leavenworth (Munson)	KS	66027-5400	Army	19	6	3	2	2
	75	Howard AB, Panama, APO	AA	34001-5300	AF	18	3	1	2	2
	76	NH Oak Harbor	WA	98278-8800	Navy	15	11	1	2	2
	77	NH Groton	CT	06349-5600	Navy	15	10	5	3	2
	78	Bitburg AB, GE, APO	AE	09126-3690	AF	15	6	4	3	3
	79	Kirtland AFB	NM	87177-5559	AF	15	8	3	5	5
	80	Barksdale AFB	LA	71110-2425	AF	15	9	3	4	4
	81	Hill AFB	UT	84056-5012	AF	15	8	3	2	2
	82	Minot AFB	ND	58705-5024	AF	15	13	2	3	3
	83	Mountain Home AFB	ID	83648-1000	AF	15	10	2	3	3
	84	Robbins AFB	GA	31098-2227	AF	15	7	2	3	3
	85	Seymour-Johnson AFB	NC	27531-2310	AF	15	8	2	2	3
	86	Misawa, JP, APO	AP	96319-5024	AF	15	11	2	2	2
	87	NH Cherry Point	NC	28533-0023	Navy	15	11	2	3	2
	88	NH Roosevelt Roads, PR, FPO	AA	34051-8100	Navy	15	8	2	2	2
	89	Ellsworth AFB	SD	57706-4821	AF	15	5	1	3	3
	90	Little Rock AFB	AR	72099-5057	AF	15	2	1	2	2

		Facility Name	State	Zip Code	Military Branch	Inpatient Beds	Avg Bed Occupancy	Avg IP Surgical	CRNA Authorized	CRNA Assigned
Small	91	Patrick AFB	FL	32925-3606	AF	15	4	1	2	2
	92	Beale AFB	CA	95903-1907	AF	15	1	0	2	1
	93	Aviano AB, Italy, APO	AE	09601-5300	AF	12	2	0	2	2
	94	NH Corpus Christi	TX	78419-5131	Navy	10	7	4	2	2
	95	Osan, KO, APO	AP	96278-2060	AF	10	4	1	2	2
	96	NH Lemoore	CA	93246-5004	Navy	10	5	1	2	2
	97	Dyess AFB	TX	79607-1367	AF	9	8	1	2	2
	98	Vandenberg AFB	CA	93437-6307	AF	8	6	2	3	3
	99	F.E.Warren AFB	WY	82005-3913	AF	8	7	2	2	2
	100	NH Naples, IT, FPO	AE	09619-0700	Navy	8	9	2	2	2
	101	Edwards AFB	CA	93524-1730	AF	7	6	1	3	4
	102	Cannon AFB	NM	88103-5014	AF	7	6	1	2	2
	103	NH Sigonella, IT, FPO	AE	09627-2670	Navy	7	5	1	2	2
	104	Grand Forks AFB	ND	58205-6332	AF	6	6	1	2	2
	105	NH Guantanamo Bay, FPO	AE	09593-0136	Navy	6	4	1	1	1
	106	Altus AFB	OK	73523-5000	AF	5	4	1	2	2
	107	Holloman AFB	NM	88330-8273	AF	5	3	1	2	2
	108	Whiteman AFB	MO	65305-5001	AF	5	5	1	2	2
	109	NH Patuxent	MD	20670-5370	Navy	5	2	1	2	2
	110	NH Keflavik, Iceland, FPO	AE	09728-0308	Navy	4	3	1	1	1
		EXTRA-HOSPITAL ACTIVITIES								
Air Force		OUT-PATIENT SERVICE FACILITIES								
	111	Malmstrom AFB	MT	59402-6780	AF				2	2
	112	McConnell AFB	KS	67221-3500	AF				2	2
Army		DEPLOYABLE TEAMS								
	113	Fort Carson	CO	80913-5000	Army				1	1
	114	Fort Stewart	GA	31314-5300	Army				2	2
	115	Fort Campbell	KY	42223-1498	Army				3	3
	116	Fort Polk	LA	71459-6000	Army				1	1
	117	Fort Bragg	NC	28307-5000	Army				7	7
	118	Fort Sill	OK	73503-6300	Army				1	1
	119	Fort Hood	TX	76544-5063	Army				5	5
	120	Madigan Army Medical Center	WA	98431-5000	Army				2	2
	121	Deployable Teams - Europe	AE	09096	Army				11	2
Navy	122	USNS Mercy - San Diego	CA	92136-5075	Navy				*13	*12
	123	USNS Comfort - Baltimore	MD	20889-5600	Navy				*8	*8
	124	Surgical Team - Little Creek	VA	09501-7028	Navy				4	4
	125	Surgical Team - San Diego	CA	92134-5000	Navy				4	4
	126	Surgical Team - Okinawa, Japan	AP	96362-1600	Navy				1	1

*Unmanned except during deployment

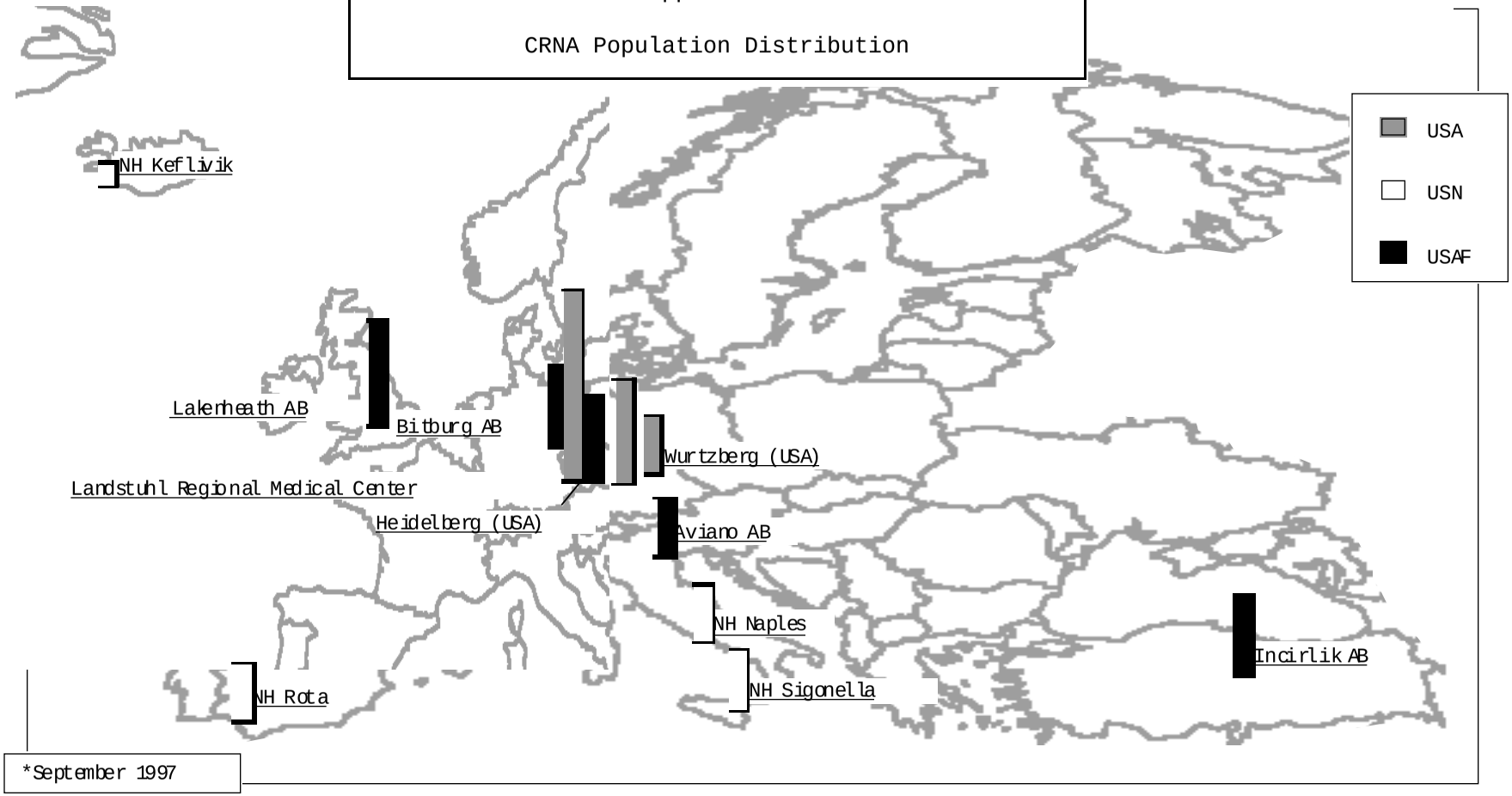
Appendix B

CRNA Population Distribution



Appendix B

CRNA Population Distribution



*September 1997

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CRNA Population Distribution